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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/720,065	11/25/2003	Cheng-Tzu Kuo	BHT-3230-75	4206

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TROXELL LAW OFFICE PLLC  
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FALLS CHURCH, VA 22041

EXAMINER
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OLSEN, ALLAN W

ART UNIT	PAPER NUMBER
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1763

DATE MAILED: 03/31/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/720,065

Applicant(s)

KUO ET AL.

Examiner

Allan Olsen

Art Unit

1763

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 20 January 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 23-45 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 23-45 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 4/23/2004.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Specification***

The specification appears to be a literal translation into English from a foreign document and is replete with grammatical and idiomatic errors. A substitute specification in proper idiomatic English and in compliance with 37 CFR 1.52(a) and (b) is required. The substitute specification filed must be accompanied by a statement that it contains no new matter.

### ***Claim Objections***

Claim 36 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Unless applicant can identify an electrochemical plating process that does not comprise electroplating or electroless plating, applicant is required to cancel the claim, or amend the claim to place the claims in proper dependent form, or rewrite the claims in independent form.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 23-45 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term “encapsulated” is frequently used. However, the examiner is not sure that use of this term is proper. According to the examiner’s understanding of applicant’s process, the carbon-based nanostructures are more accurately described as being capped with a magnetic nano-particle. (With the magnetic nano-particle serving as a catalyst and a template for the growth of carbon-based nanostructures.)

Claim 33 includes “transfer printing” as a possible component of the plasma pre-treating step. It is not clear how the disclosed transfer printing (stamping) can be considered to be part of a plasma step.

Claim 37 recites the limitation “wherein said coating said substrate with a metal salt or an alloy thereof comprises...”. There is insufficient antecedent basis for this limitation in the claim. While there is basis for “said coating” and there is basis for “said substrate” there is not a basis for “said coating ...with a metal salt...”

Likewise, claim 38 recites the limitation “wherein said transfer printing with a metal salt or an alloy thereof of said catalyst comprises...”. There is insufficient antecedent basis for this limitation in the claim.

Claims 39-41 each recite, “wherein said substrate comprises...”. However, that which follows, for example, “a uniform thin layer pattern or a grain pattern” was not described in the specification as being part of the substrate. Rather, the specification

Art Unit: 1763

appears to disclose a substrate that consists of silicon, stainless steel or quartz. The specification further discloses that upon this substrate, a patterned catalyst layer is deposited or a catalyst layer is deposited and then patterned.

Claim 44 recites "an amine of methane". By this, does applicant mean methylamine, dimethylamine or trimethylamine?

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 23-45 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claims contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claims 23-45 are directed to a process of controlling the growth of a magnetic alloy-encapsulated carbon-based nanostructure. Such a process is not enabled because there is no disclosure pertaining to an encapsulation step. While the specification discloses the provision of a catalytic magnetic alloy, this appears to constitute providing a nano-particle upon which the carbon-based structures grow. As such, these magnetic alloy nano-particles do not encapsulate the carbon-based nanostructures.

Claims 23-45 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claims contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention.

Claim 23 recites, "microwave plasma electron cyclotron resonance chemical vapor depositing an additive and a catalyst on a substrate...".

The examiner finds no basis for this limitation in the application as originally filed. To the examiner's understanding, the application seems geared to a process comprising the following sequential steps:

- 1) deposition of a catalyst and an additive on a substrate
- 2) pretreatment of the substrate by heat and "etching"
- 3) microwave plasma ecr-cvd of carbon based nanostructures by reacting with substrate with a gas.

The process also includes the application of a magnetic field during step 3 (and perhaps during step 2 and after step 3 as well). The specification suggests that the provision of the magnetic field differentiates the process from the conventional process.

Claims 24, 25, 28, 29 and 33-45 use open claim language by reciting "...comprising..." or "comprises", for example, claims 28 and 29 each recite, "said additive comprises...". The examiner finds no support for the open claim language recited in these claims.

Claim 38 recites, "forming a rubber elastomer on said substrate, then heating...". The examiner believes that the references to an elastomer in the originally filed specification (see page 7 and original claim 16), pertains to a transfer printing process wherein a material that is coated upon an elastomeric stamp is transferred to the substrate by contacting the substrate with the coated stamp. Such a process does not support the limitation "forming an elastomer on said substrate."

Claim 44 recites "an amine of methane". The examiner finds no basis for this limitation in the application as originally filed.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of 35 U.S.C. 102 (a), which forms the basis for the following rejection:

A person shall be entitled to a patent unless –(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claims 23-45 are rejected under 35 U.S.C. 102(a) as anticipated by Little's US Patent Application Publication 2002/0192141 (hereinafter, Little).

Little discloses depositing magnetic particles as catalyst for the CVD formation of carbon nanotubes. Little teaches an annealing step wherein a strong magnetic field is applied while heating the magnetic particles. Little teaches applying a strong magnetic field during the CVD formation of the nanotubes. See abstract, figure 18 and paragraphs [0047], [0057], [0059] and [0140], [0147].

***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

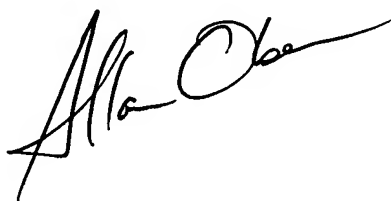
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Allan Olsen whose telephone number is 571-272-1441. The examiner can normally be reached on M-F 1-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on 571-272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



Art Unit: 1763

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read "Allan Olsen", written in a cursive style.

Allan Olsen  
Primary Examiner  
Art Unit 1763